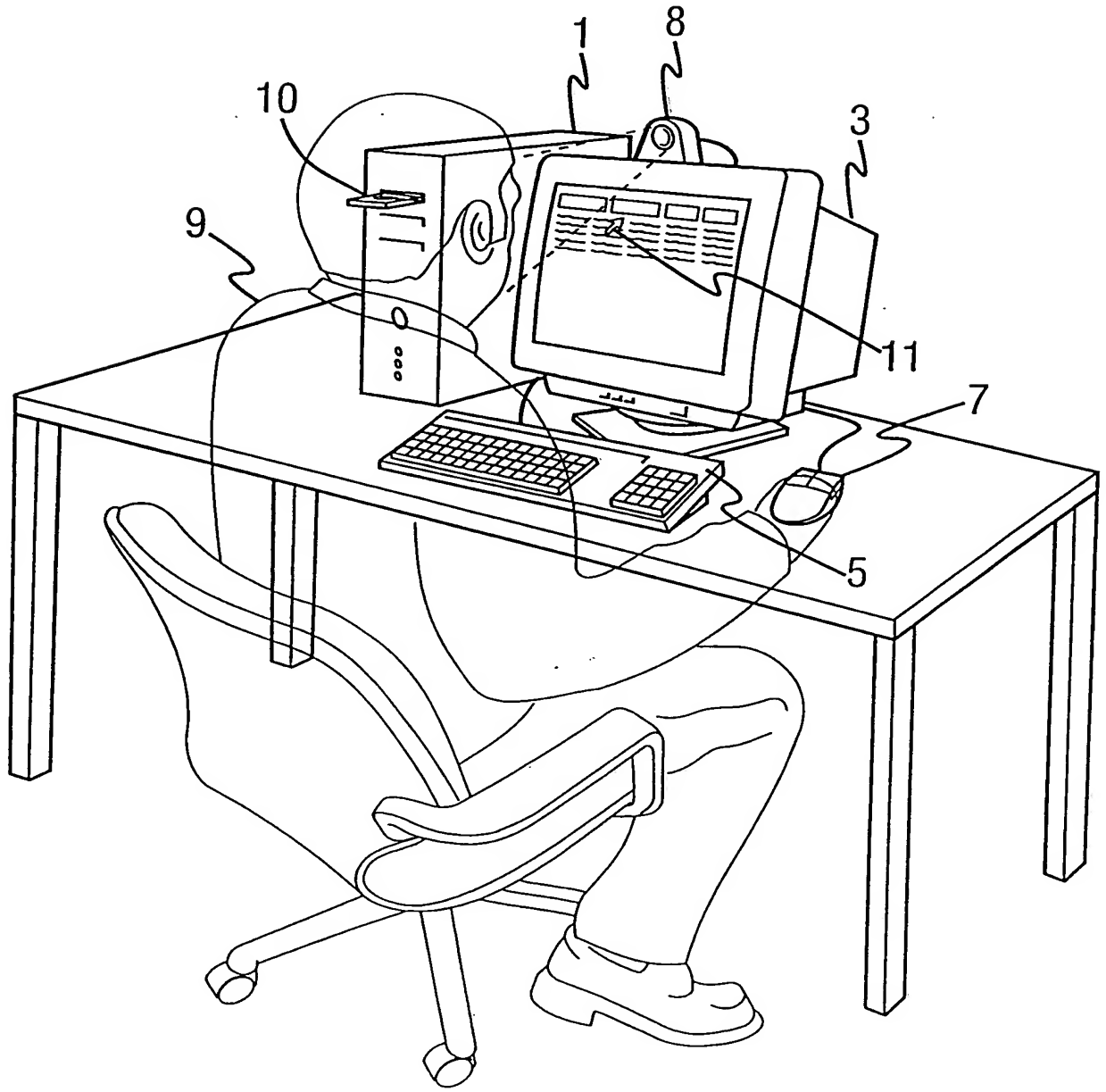
FIG. 1



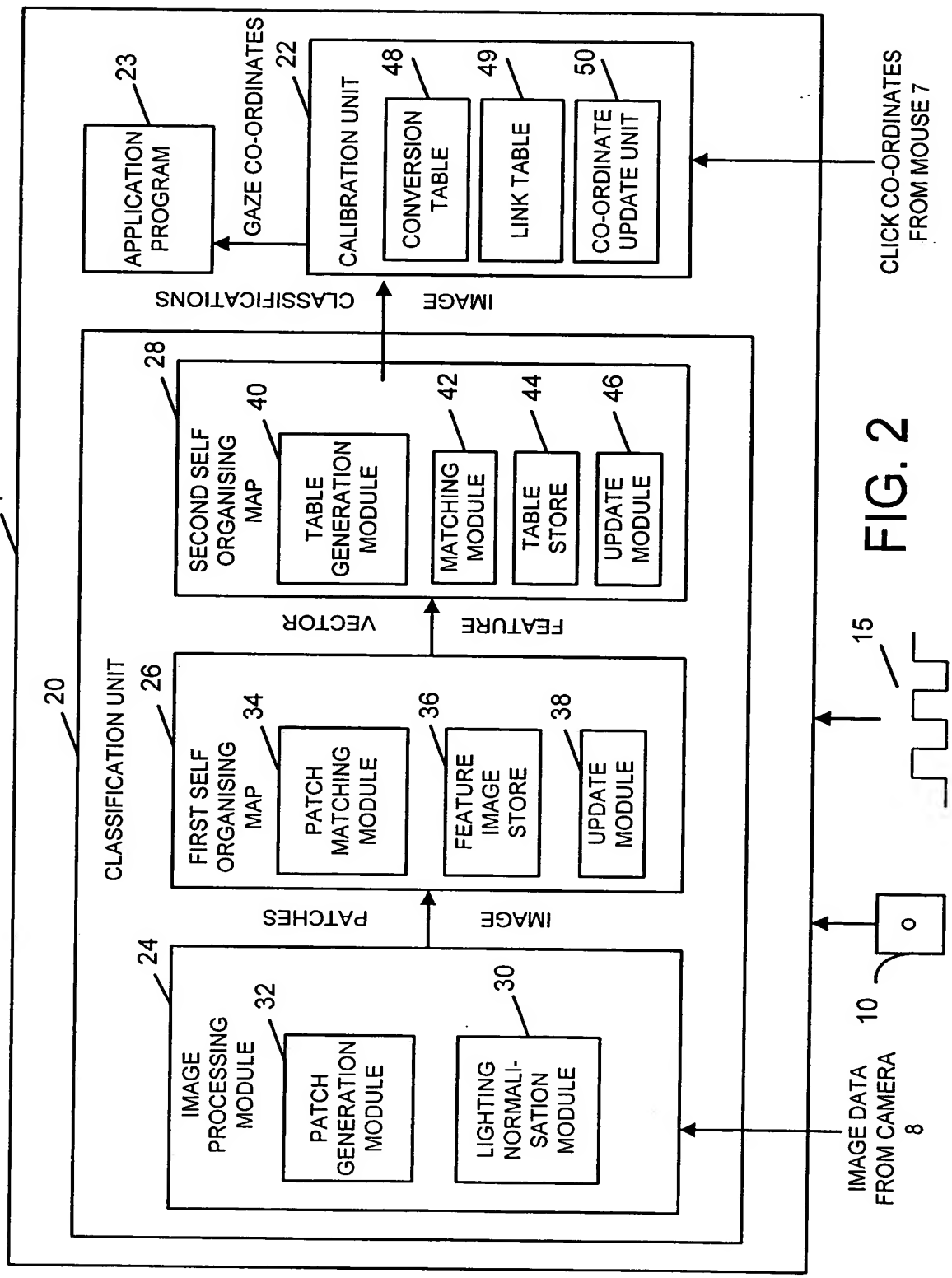
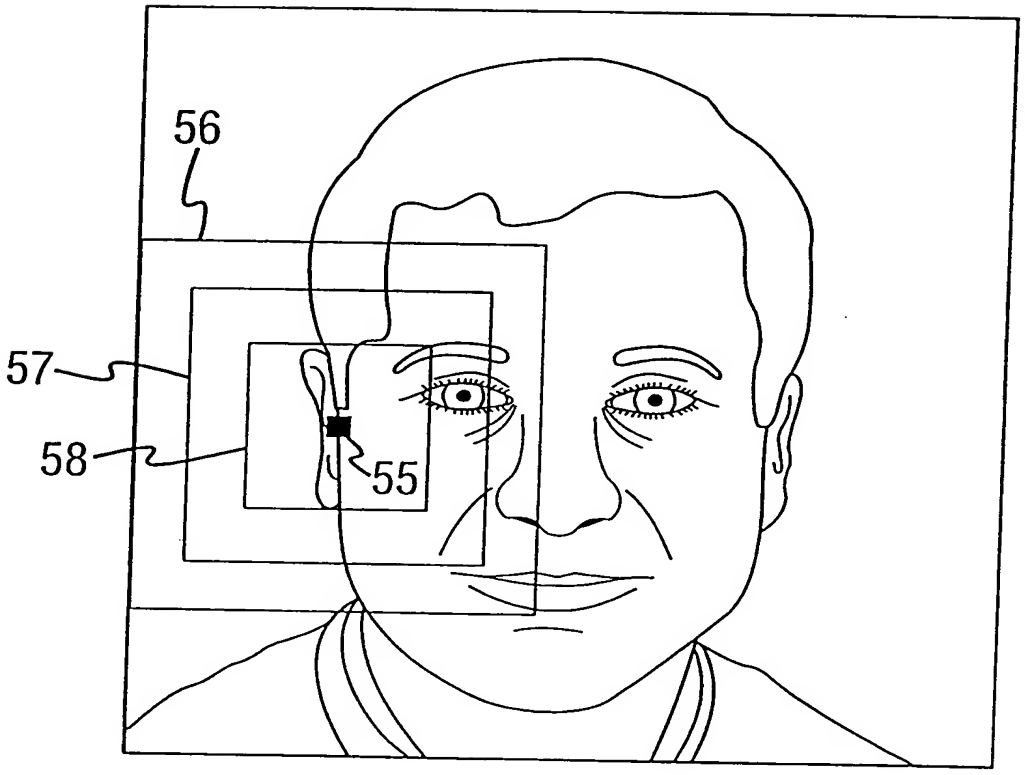

1
20
CLASSIFICATION UNIT
24
IMAGE PROCESSING MODULE
32
PATCH GENERATION MODULE
30
LIGHTING NORMALI-SATION MODULE
PATCHES
IMAGE
26
FIRST SELF ORGANISING MAP
34
PATCH MATCHING MODULE
36
FEATURE IMAGE STORE
38
UPDATE MODULE
VECTOR
FEATURE
28
SECOND SELF ORGANISING MAP
40
TABLE GENERATION MODULE
42
MATCHING MODULE
44
TABLE STORE
46
UPDATE MODULE
CLASSIFICATIONS
IMAGE
GAZE CO-ORDINATES
23
APPLICATION PROGRAM
22
CALIBRATION UNIT
48
CONVERSION TABLE
49
LINK TABLE
50
CO-ORDINATE UPDATE UNIT
CLICK CO-ORDINATES FROM MOUSE 7
15
10
IMAGE DATA FROM CAMERA 8

FIG. 2

FIG. 3



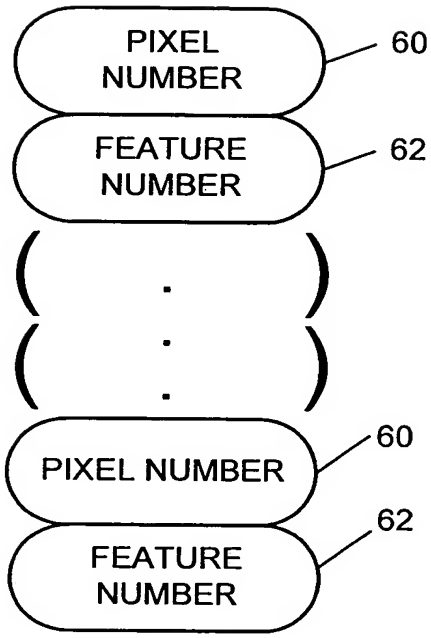

PIXEL NUMBER
60
FEATURE NUMBER
62
PIXEL NUMBER
60
FEATURE NUMBER
62

FIG. 4

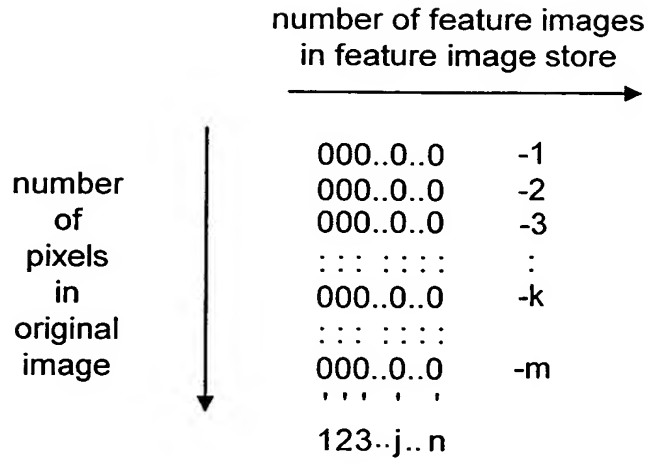

number of feature images
in feature image store
number
of
pixels
in
original
image
000..0..0 -1
000..0..0 -2
000..0..0 -3
: : : : : : : :
000..0..0 -k
: : : : : : : :
000..0..0 -m
' ' ' ' '
123..j..n

FIG. 5A

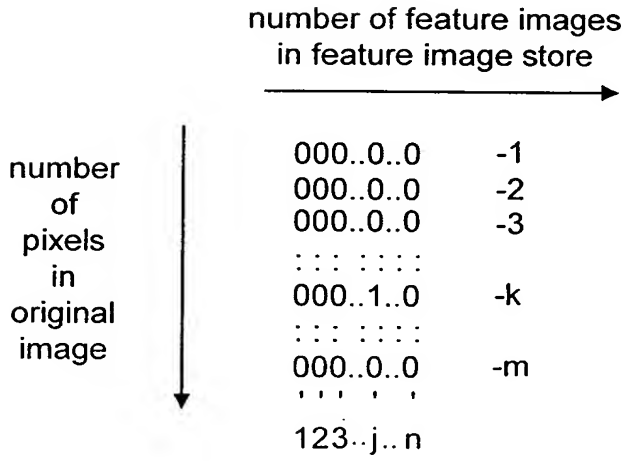

number of feature images
in feature image store
number
of
pixels
in
original
image
000..0..0 -1
000..0..0 -2
000..0..0 -3
: : : : : : : :
000..1..0 -k
: : : : : : : :
000..0..0 -m
' ' ' ' '
123..j..n

FIG. 5B

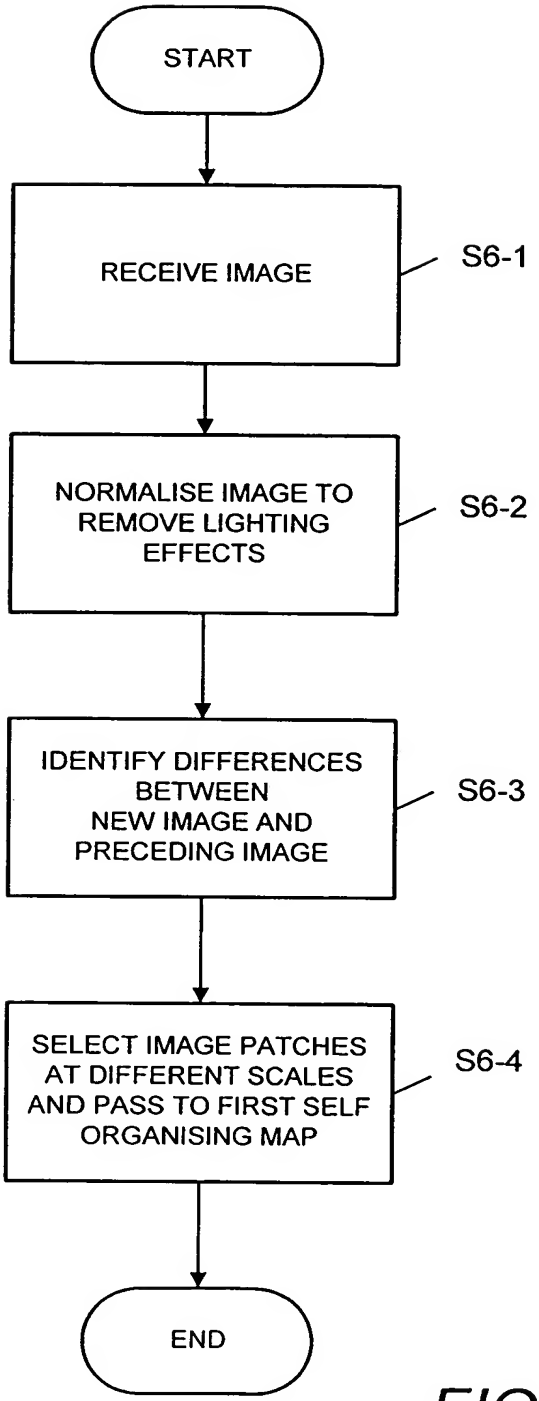

START
RECEIVE IMAGE
S6-1
NORMALISE IMAGE TO REMOVE LIGHTING EFFECTS
S6-2
IDENTIFY DIFFERENCES BETWEEN NEW IMAGE AND PRECEDING IMAGE
S6-3
SELECT IMAGE PATCHES AT DIFFERENT SCALES AND PASS TO FIRST SELF ORGANISING MAP
S6-4
END

FIG. 6

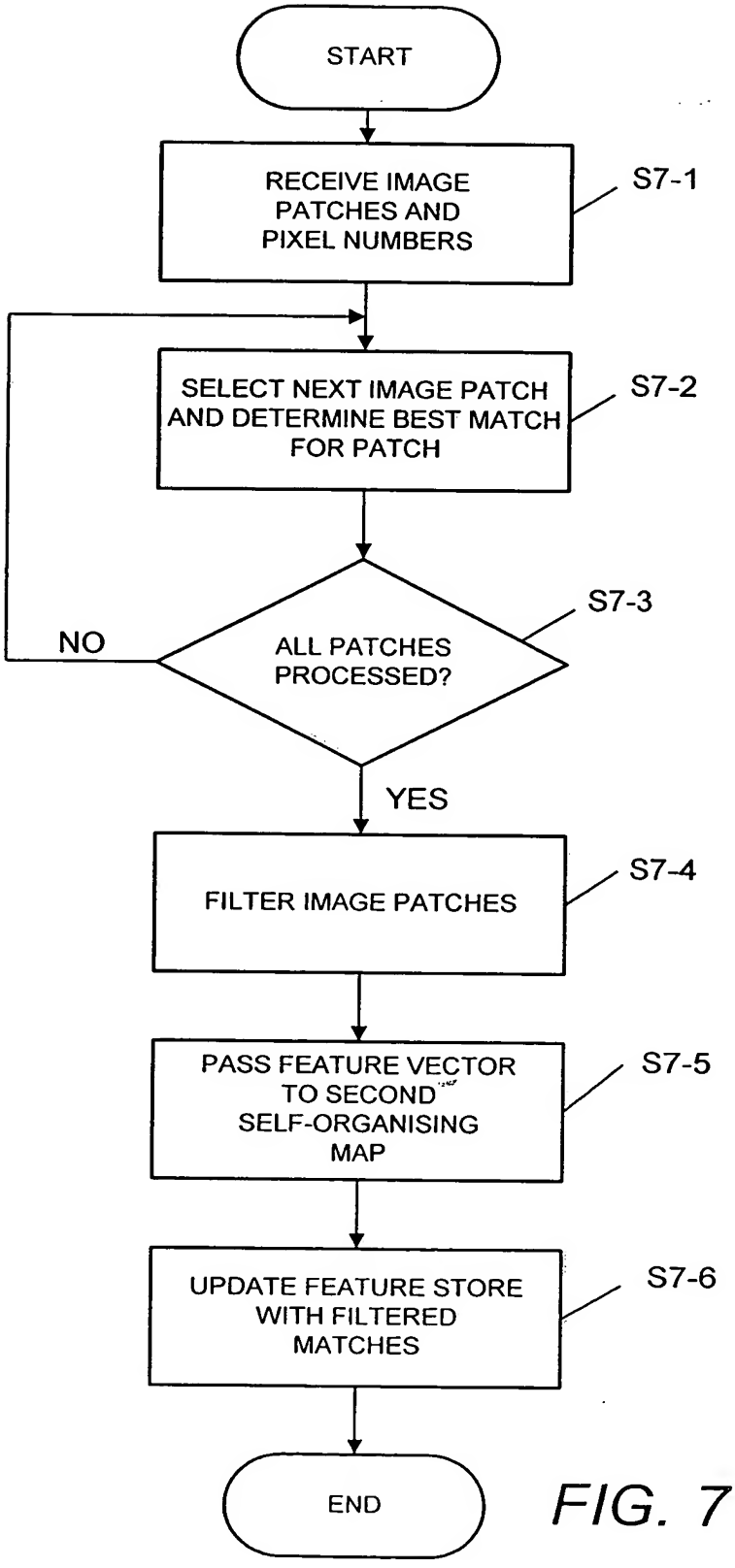

START
RECEIVE IMAGE PATCHES AND PIXEL NUMBERS
S7-1
SELECT NEXT IMAGE PATCH AND DETERMINE BEST MATCH FOR PATCH
S7-2
ALL PATCHES PROCESSED?
S7-3
NO
YES
FILTER IMAGE PATCHES
S7-4
PASS FEATURE VECTOR TO SECOND SELF-ORGANISING MAP
S7-5
UPDATE FEATURE STORE WITH FILTERED MATCHES
S7-6
END

FIG. 7

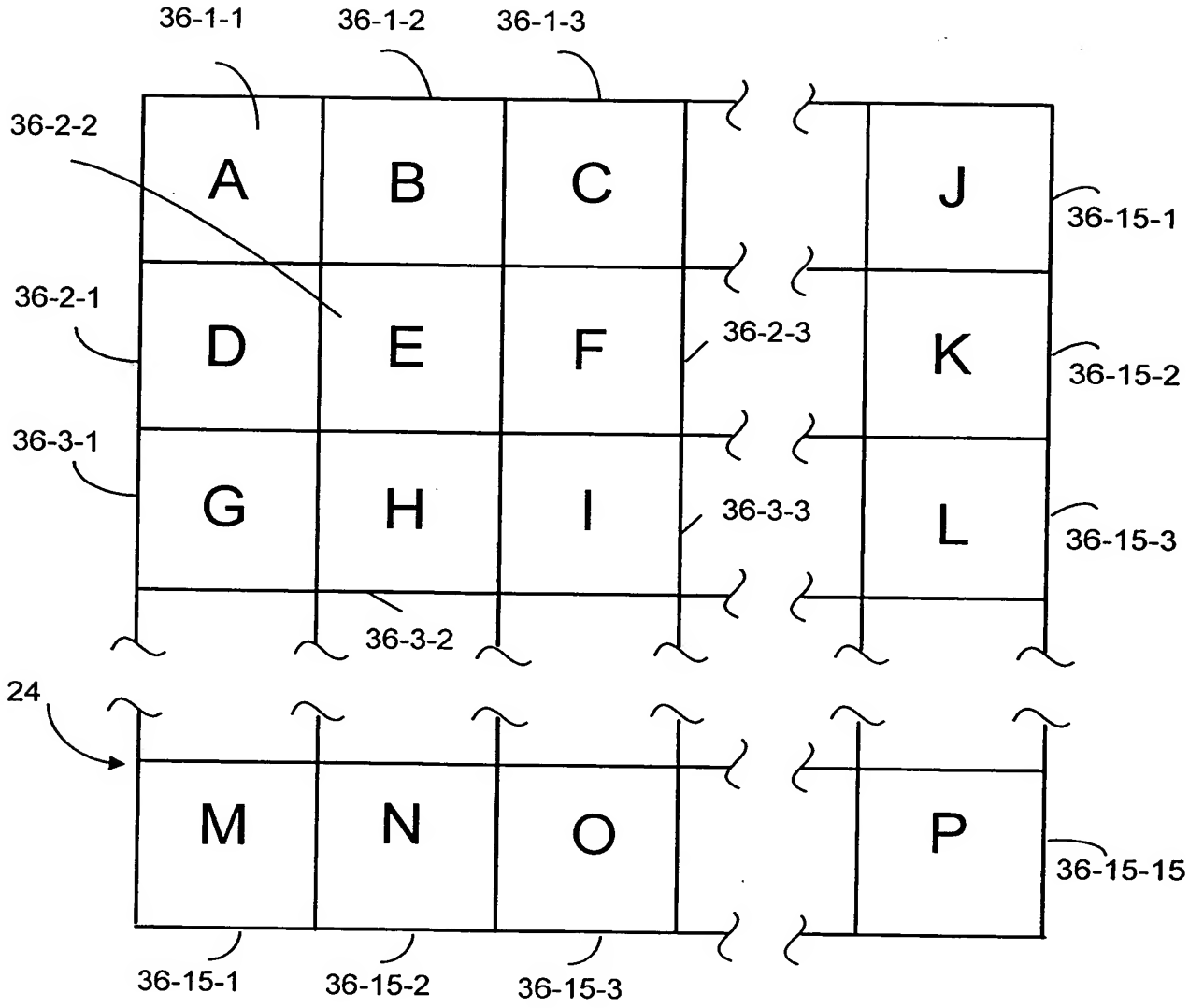

36-1-1
36-1-2
36-1-3
36-2-2
A
B
C
J
36-15-1
36-2-1
D
E
F
36-2-3
K
36-15-2
36-3-1
G
H
I
36-3-3
L
36-15-3
36-3-2
24
M
N
O
P
36-15-15
36-15-1
36-15-2
36-15-3

FIG. 8

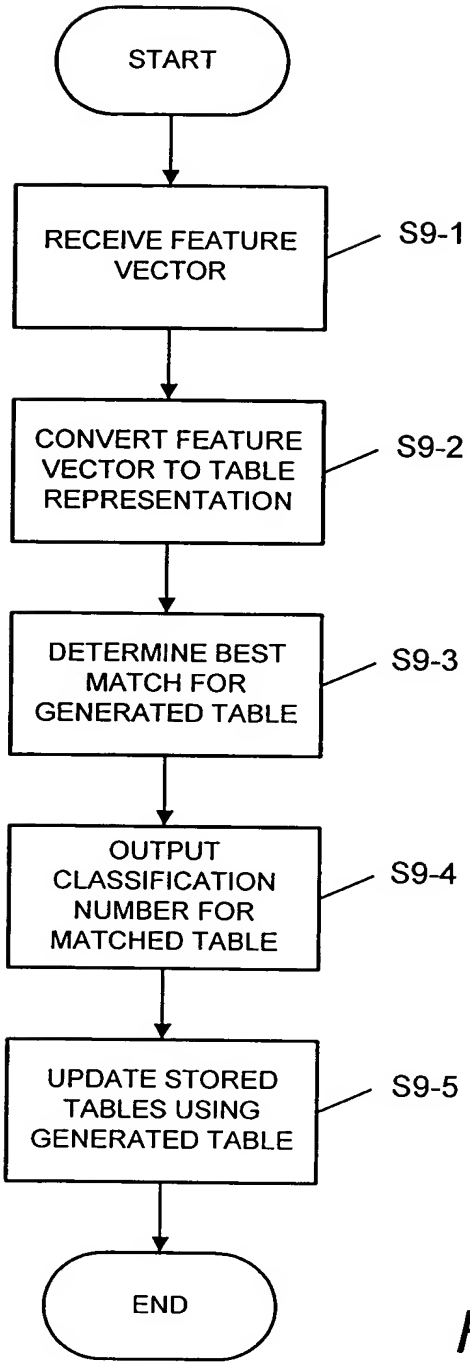

START
RECEIVE FEATURE VECTOR
S9-1
CONVERT FEATURE VECTOR TO TABLE REPRESENTATION
S9-2
DETERMINE BEST MATCH FOR GENERATED TABLE
S9-3
OUTPUT CLASSIFICATION NUMBER FOR MATCHED TABLE
S9-4
UPDATE STORED TABLES USING GENERATED TABLE
S9-5
END

FIG. 9

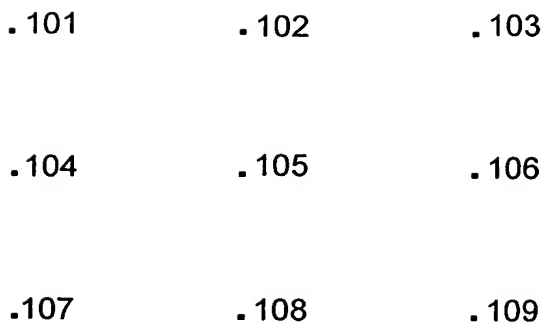


FIG. 10A

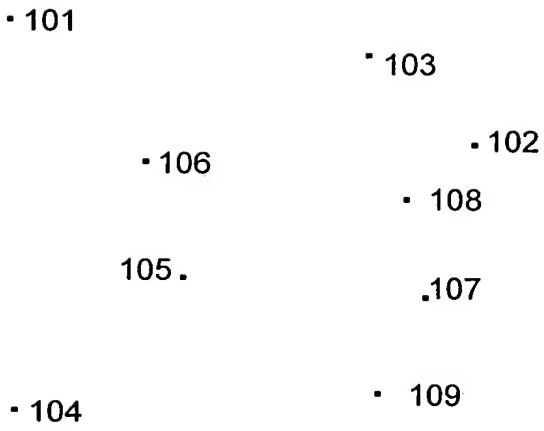


FIG. 10B

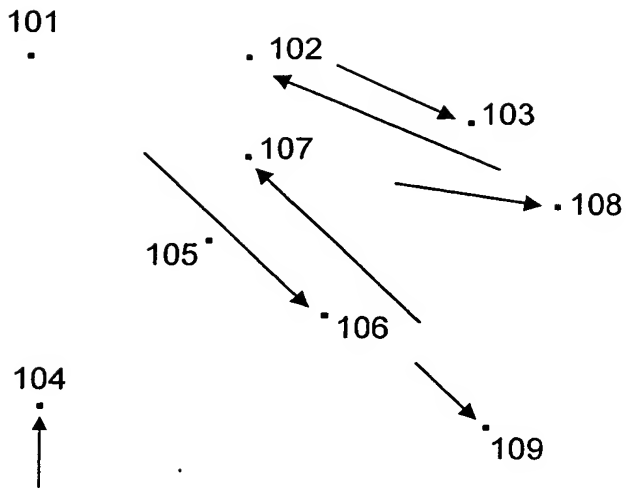


FIG. 10C

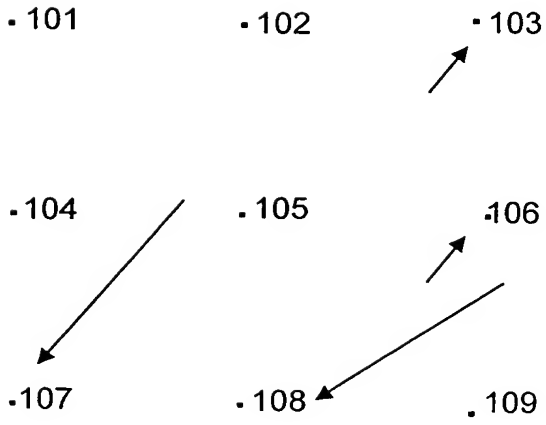


FIG. 10D

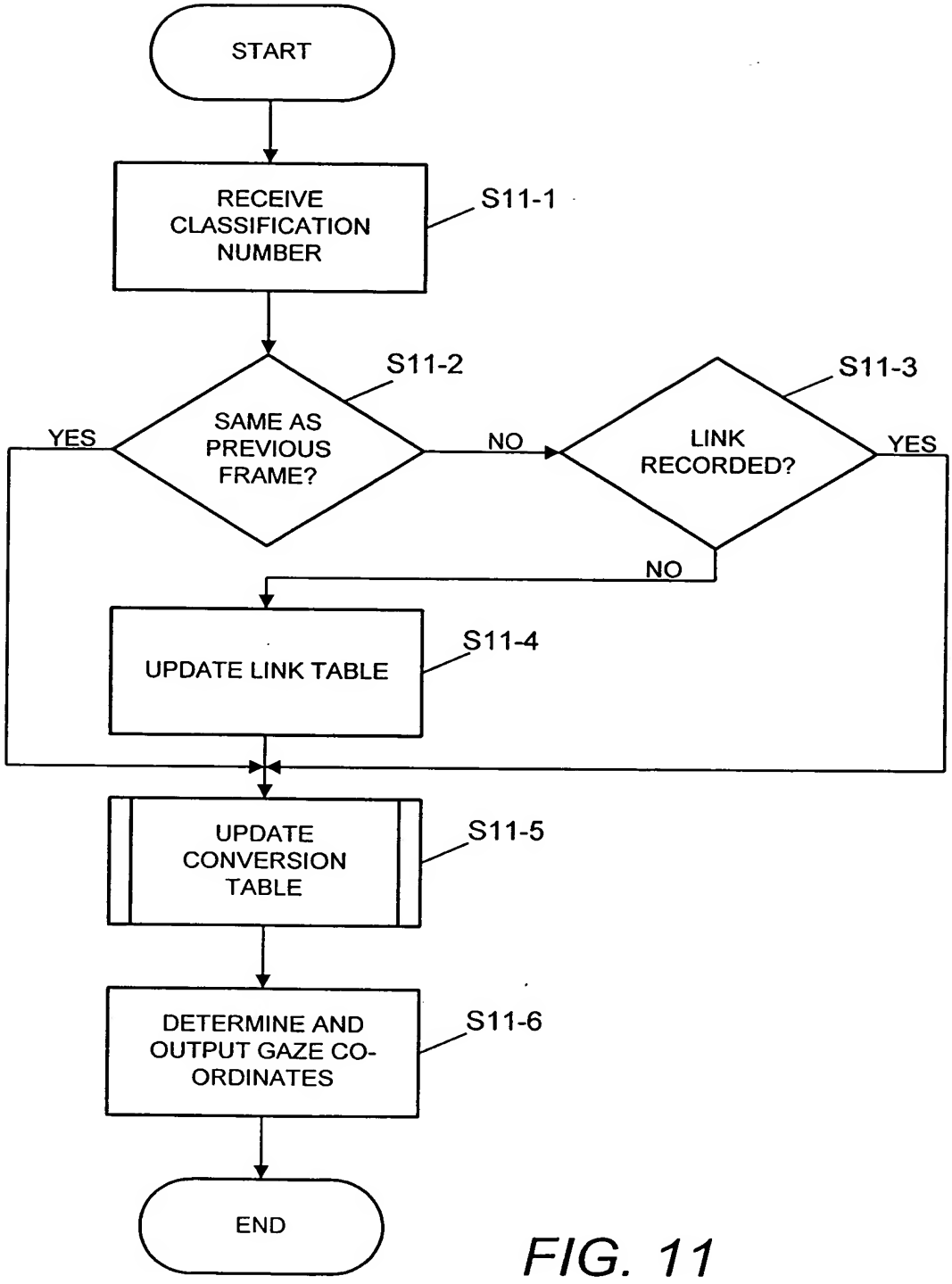

START
RECEIVE CLASSIFICATION NUMBER
S11-1
SAME AS PREVIOUS FRAME?
S11-2
YES
NO
LINK RECORDED?
S11-3
YES
NO
UPDATE LINK TABLE
S11-4
UPDATE CONVERSION TABLE
S11-5
DETERMINE AND OUTPUT GAZE CO-ORDINATES
S11-6
END

FIG. 11

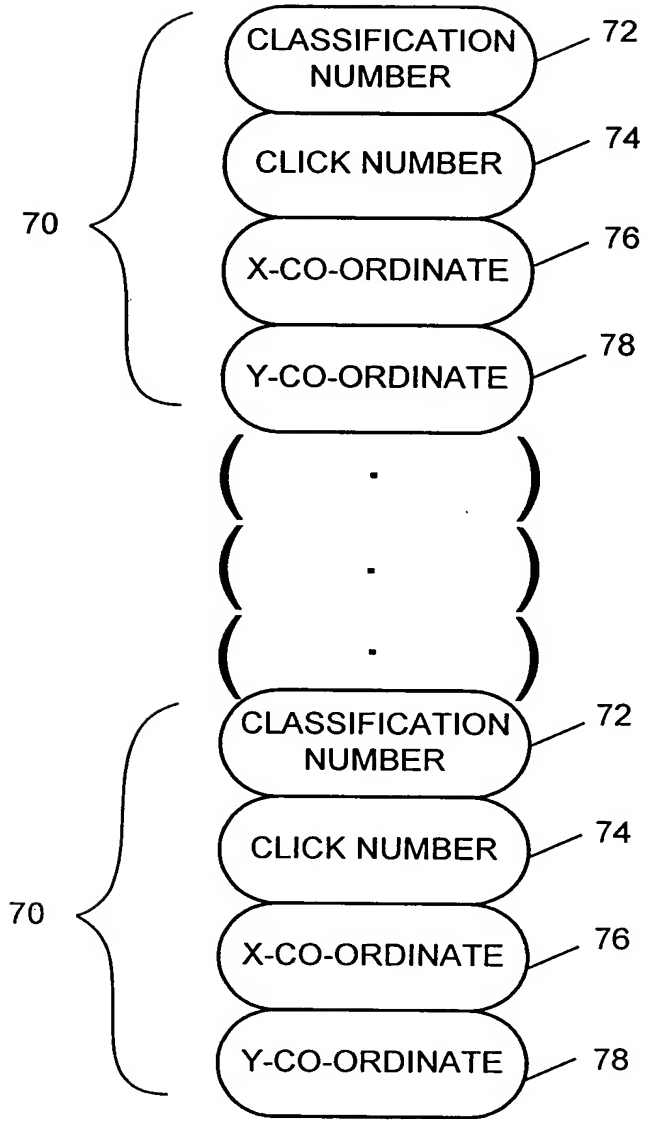

CLASSIFICATION NUMBER
72
CLICK NUMBER
74
70
X-CO-ORDINATE
76
Y-CO-ORDINATE
78
CLASSIFICATION NUMBER
72
CLICK NUMBER
74
70
X-CO-ORDINATE
76
Y-CO-ORDINATE
78

FIG. 12

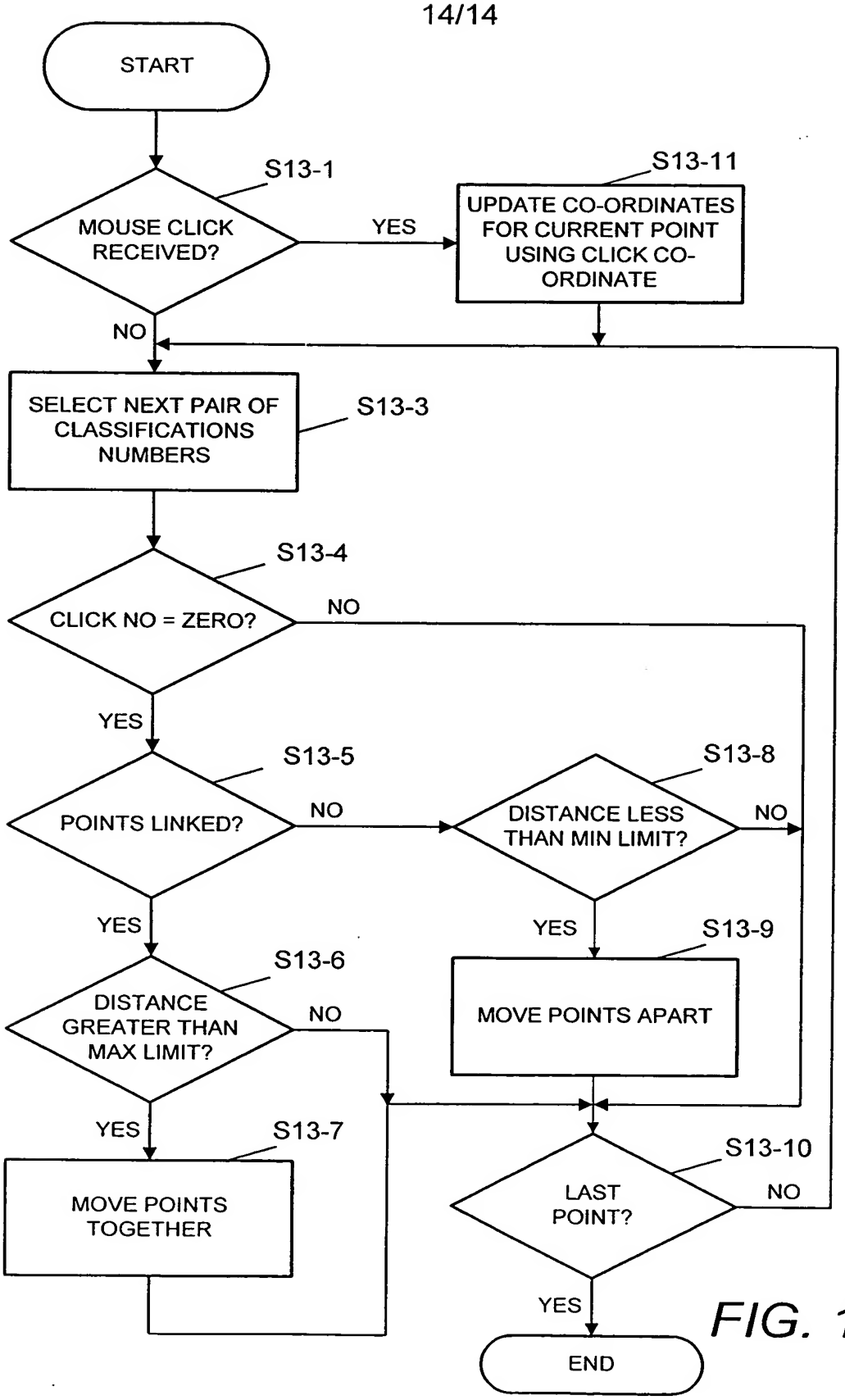

START
S13-1
MOUSE CLICK RECEIVED?
YES
S13-11
UPDATE CO-ORDINATES FOR CURRENT POINT USING CLICK CO-ORDINATE
NO
SELECT NEXT PAIR OF CLASSIFICATIONS NUMBERS
S13-3
S13-4
CLICK NO = ZERO?
NO
YES
S13-5
POINTS LINKED?
NO
S13-8
DISTANCE LESS THAN MIN LIMIT?
NO
YES
YES
S13-9
S13-6
DISTANCE GREATER THAN MAX LIMIT?
NO
MOVE POINTS APART
YES
S13-7
MOVE POINTS TOGETHER
S13-10
LAST POINT?
NO
YES
END

FIG. 13